

# RDCV

## Residential analogue/digital controller



The RDCV series are residential HVAC controllers used to control EC-fans, actuators, lighting or other applications with an analog (0–10 VDC / 0–20 mA / PWM) signal. They feature a wide supply voltage range 110–230 VAC / 50–60 Hz and a variable control output signal between an adjustable minimum and maximum level. The controller can work in 2 modes. In Automatic mode it is a demand-based controller with adjustable setpoint that can be connected to a broad range of Sentera sensors. In Manual mode, the RDCV works as a full-featured potentiometer. The settings are easily adjustable either via a 3-button interface equipped with a 7-Segment LED display, via our 3SModbus software application or via the Sensistant configurator.

### Key features

- User-friendly menu using a 3-digit, 7-segment display with 3-button keyboard interface
- Extended menu via 3SModbus software application or Sensistant configurator
- Selectable output: analog / digital (PWM)
- Adjustable minimum and maximum output values
- Suitable for inset or surface mounting
- 2 operating modes: Manual or Automatic (in combination with a sensor)
- Adjustable setpoint for temperature, Relative humidity, CO<sub>2</sub>, Air quality, differential pressure
- Setpoint for PI control or direct control with fixed hysteresis
- Display can be toggled between measured value and output value
- User can manually override the output value for a fixed time
- Compatible with all Sentera sensors with Modbus RTU communication
- Stepless output or output in 2–10 steps
- Adjustable start output value or start output step
- Display can be toggled between output value and step
- Modbus RTU (RS485) communication for integration with BMS

Manual mode Automatic mode

### Area of use

- Manual control for HVAC applications
- Demand based control for HVAC applications
- For indoor use only

### Technical Specifications

Inrush current	Max. 15 A (100 VAC) Max. 25 A (240 VAC)	
No-load (stand-by) power	110 VAC / 60 Hz < 1,1 W 230 VAC / 50 Hz < 1,2 W	
Load resistance	0–10 VDC mode ≥ 10 kΩ 0–20 mA mode ≤ 500 Ω PWM mode ≥ 10 kΩ	
Output	0–10 VDC	Min: 0–8 VDC Max: 4–10 VDC
	0–20 mA	Min: 0–16 mA Max: 8–20 mA
	0–100 % PWM	Min: 0–80 % PWM Max: 20–100 % PWM
Selectable PWM output	Open collector Internally supplied (12 VDC)	
Protection standard	IP44 / IP54 (according to EN 60529)	
Ambient conditions	Temperature	-10–40 °C
	Rel. humidity	5–80 % rH (non-condensing)



### Article codes

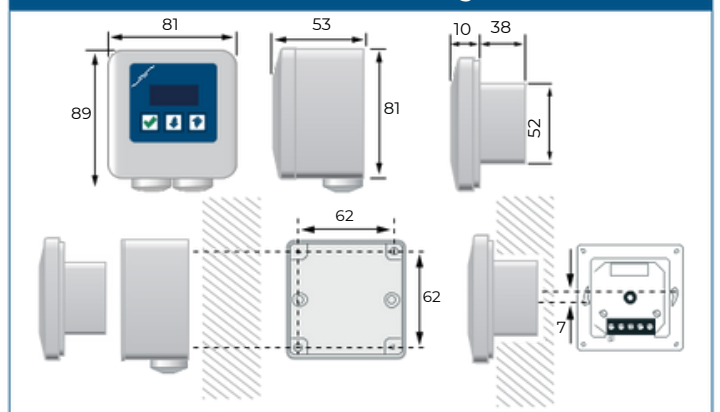
Article code	Supply voltage, Us	Enclosure
RDCV9-AD-WH	110–230 VAC ±10 % / 50–60 Hz	White
RDCV9-AD-BK		Black (anthracite)

### Standards

- Low Voltage Directive 2014/35/EC
- EMC Directive 2014/30/EC: EN 61000-6-2: 2005/AC:2005, EN 61000-6-3:2007/A1:2011/AC:2012, EN 61326-2-3:2013
- RoHS Directive 2011/65/EC



### Fixing and dimensions





### Wiring and connections



L	Line, power supply (110—230 VAC ±10 % / 50—60 Hz)
N	Neutral, power supply (110—230 VAC ±10 % / 50—60 Hz)
Ao	Analog / digital output (0—10 VDC / 0—20 mA / PWM)
GND	Ground
A	Modbus RTU (RS485), signal A
/B	Modbus RTU (RS485), signal /B
Connections	Cable cross section: max. 2,5 mm <sup>2</sup>

**Caution:** If an AC power supply is used with any of the units in a Modbus network, the GND terminal should NOT BE CONNECTED to other units on the network or via the CNVT-USB-RS485 converter. This may cause permanent damage to the communication semiconductors and / or the computer!

### Packaging

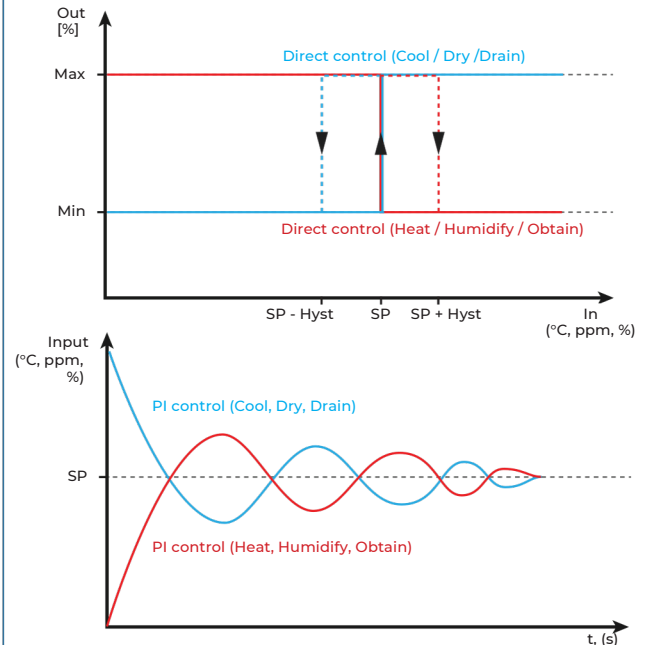


Article	Packaging	Length [mm]	Width [mm]	Height [mm]	Net weight	Gross weight
RDCV9-AD-WH RDCV9-AD-BK	Unit (1 pc.)	85	95	70	0,17 kg	0,88 kg
	Carton (10 pcs.)	485	175	77	1,68 kg	2,03 kg
	Box (60 pcs.)	580	370	270	10,08 kg	13,17 kg

### Global trade item numbers (GTIN)

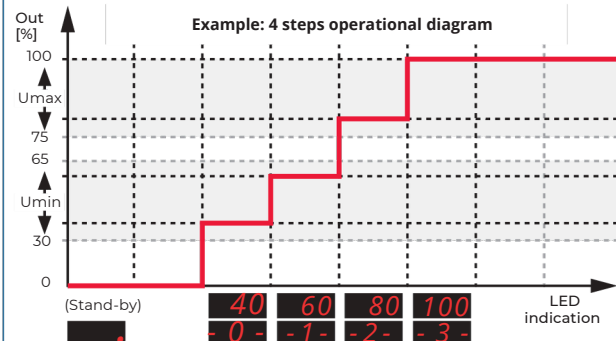
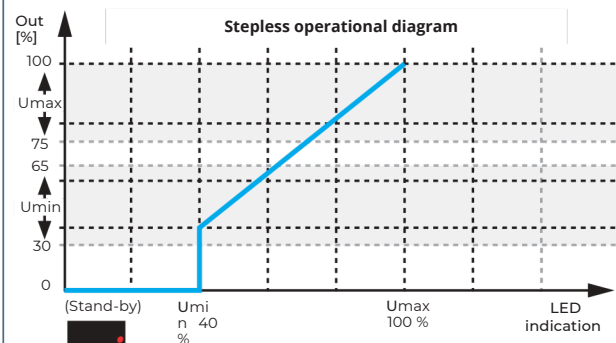
Packaging	RDCV9-AD-WH	RDCV9-AD-BK
Unit	05401003011195	05401003011188
Carton	05401003301685	05401003301678
Box	05401003502501	05401003502495

### Operational diagrams



\* PI control can require adjustment of parameters, depending on the local circumstances.

Automatic mode



\* In the examples Umin is set to 40% and Umax to 100%

Manual mode

Legend	
DP	Decimal point - OFF / Stand-by
0—100	Output value in percentage of Us
Min	Minimum output value (0—80 % of the output range)
Max	Maximum output value (20—100 % of the output range), Max. ≥ Min. + 20 %
Out	Output value



Application examples

Automatic mode

RST  
Room sensor



RDCV  
Residential Digital Controller



AC fan (voltage controllable motor)



Modbus RTU

0–10 VDC /  
0–20 mA / PWM

Manual mode

RDCV  
Residential Digital Controller



AC fan (voltage controllable motor)



0–10 VDC /  
0–20 mA / PWM